**HW p. 612**

**(8)** μd = males – females

Conditions:

1) Paired data 1) the males and females are from the same country

2) SRS 2) assumed representative

3) popd > 10nd 3) there are more than 270 countries in the world?

4) normal popd or nd > 30 4) normal probability plot is linear => normal data

Conditions met => t-distrib. => Paired 1-sample t-Interval

(4.4839, 11.442) df= 26

We are 95% confident that the true average difference in the rate of male and female drunk 15-year-olds is between 4.4839% and 11.442%.

We are 95% confident that males have been drunk on average between 4.4839% and 11.442% more than females.

**(23)** μd = After - Before

Ho: μd = 0

Ha: μd < 0

Conditions:

1) Paired data 1) the test was done on the same rooms in the hotel, before & after the new AC units were installed

2) SRS 2) assume representative

3) pop of diff. > 10nd 3) there are more than 80 rooms in the hotel

4) normal popd or nd > 30 4) norm. prob. plot of differences is approx. linear --> normal data

Conditions met --> t-distribution --> 1-sample Paired t-Test

= (-2.648, -0.5775) df = 7

We are 95% confident that the average difference in the bacteria count in the hotel before and after the new AC units is between -2.648 and -0.5775 colonies/ft3.

We are 95% confident that on average the bacteria count is between 2.648 and 0.5775 colonies/ft3 lower with the new AC units.

Since 0 is not in the interval, we have sufficient evidence that the new AC units did succeed in lowering the bacterial count.